

DIRECTORY

System for Analysis and Monitoring of Real Estate Market Transactions (AMRON System)





Związek Banków Polskich



dr Jacek Furga Prezes Zarządu Centrum Prawa Bankowego i Informacji Sp. z o.o.

Practice of disclosing the economic information in Poland is relatively new – System BANKING REGISTER was launched by the Polish Banks Association in 1992, Bureau of Credit Information has operated since 1997 and Bureau of Economic Information InfoMonitor S.A. was established basing on the act on disclosing economic information as of February 14, 2003.

Despite the fact that system of economic information disclosure is relatively new, Polish Banks Association has elaborated solutions comparable with worldwide standards, from the perspective of data quality, dataflow velocity, security of both data processing and data transferring.

Reliable information on real estate value is a key element of the restoration of confidence among real estate market participants. Due to our experience, the demand for such information systematically grows, particularly during the changes of market trends.

The idea of the AMRON database appeared in Polish Banks Association in autumn 2001. AMRON started its activity in September 2004. However, it was 2006, when due to the supervisory regulation Recommendation S and drastic changes on real estate market, both in Poland and all over the world, AMRON started to gather grand interest of banks engaged in mortgage lending, as well as of other entities participating in real estate business.

Basing on the unique and credible AMRON database, Polish Banks Association established the **CENTRE OF ANALYSIS AND MONITORING OF REAL ESTATE MARKET TRANSACTIONS (AMRON CENTRE)***. The idea of such decision was to create the specialized, country-wide information and analysis centre, which would offer its services and products to all real estate market participants and both governmental and municipal institutions in the scope of i. a. keeping the registers and databases, verifying and actualizing of real estate values.

On behalf of Polish Banks Association I would like to invite and entreat all interested entities participating in real estate market to cooperate with AMRON Centre.

* AMRON Centre was established by Polish Banks Association to manage and develop the database and the System for Analysis and Monitoring of Real Estate Market Transactions and it acts within the organizational structure of Centre of Banking Law and Information Sp. z o.o.

What makes us unique?

SOLIDITY - safe system established by and for banking sector and broadly defined participants of the real estate market, under the patronage of Polish Banks Association

QUALITY - AMRON as the only in Poland interbank database on real estate within the meaning of the Recommendation J fulfils the highest quality criteria determined by Financial Supervision Authority in Recommendations addressed to banks and SKOKs (Recommendation D, Recommendation J, Recommendation S, Recommendation W, Recommendation A-SKOK)

 AVAILABILITY - AMRON is user-friendly, intuitive and easy to use web application available on-line – it requires no additional technical or financial outlays

SECURITY- the AMRON System complies with the highest safety standards confirmed by IT audit; access to the System is possible after logging through the Individual User Account

THE HIGHEST SAFETY AND PERFORMANCE STANDARDS monitored on a daily basis and verified by cyclic security audits

VERSATILITY - cooperation with the AMRON System does not require any special software installation or any additional technical effort - AMRON is a web application

STANDARDIZATION - ordered uniform data with obligation description of properties

DATA REPRESENTATIVITY - territorial distribution of data resources represents the depth of local markets and credit activity of Polish banking sector

CREDIBILITY - collected and processed data come from verifiable documents – the AMRON System allows to identity the person who entered property/ transaction into the System

ACCURATENESS - AMRON is a benchmark for media and many national and commercial institutions, dealing with professional analysis of real estate market turnover



AMRON System

AMRON System is a standardized, nationwide database on real estate prices and values, equipped with

advanced reporting and analytical modules for monitoring changes on the property market.

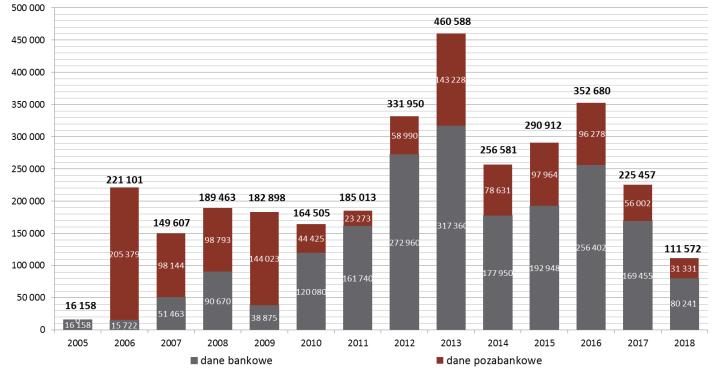
AMRON allows you to make analysis and monitor the real estate market and it becomes an indispensable tool for supporting the development of the market.

Our goal is to create a comprehensive database on Polish real estate market. AMRON provides quick and direct access to the reliable information necessary for all market players.

AMRON in numbers

AMRON database reached the level of **3.083 million data records** – it makes AMRON the unique nationwide source of information on real estate market with such an extended database.

Extension of the database's resources is performed through the manual input of the particular records or through automatic transfer of the data from participants' databases and registers via Data Loader application. This application, installed on user's PC, allows to verify, converse and transfer a huge package of data during one simple operation.



As of October, 2018

AMRON – pillar of confidence on polish real estate market

System for Analysis and Monitoring of Real Estate Market Transactions, commonly known as AMRON, is an efficient combination of a country-wide database of real estate prices and values with reporting and analyzing modules. Such a combination enables to monitor the real estate market and makes AMRON an indispensable tool, supporting both business development and risk management in real estate finance area.

The idea of the AMRON inter-banking database appeared in Polish Banks Association in autumn 2001. AM-RON started its activity in September 2004. However, it was 2006, when due to the supervisory regulation Recommendation S and drastic changes on real estate market, both in Poland and all over the world, AMRON started to gather grand interest of banks engaged in mortgage lending, as well as of other entities participating in real estate business.

Partners cooperating with AMRON

- ⇒ 29 largest commercial banks and 349 Cooperative Banks
- ⇒ SKOK im. Franciszka Stefczyka (Credit Union)
- ⇒ Polish Financial Supervision Authority
- \Rightarrow National Bank of Poland
- ⇒ National Public Prosecutor's Office
- \Rightarrow Emmerson Evaluation Sp. z o.o.
- \Rightarrow Universities
- \Rightarrow insurance companies
- \Rightarrow real estate appraisers and realtors
- ⇒ Polish Association of Developers
- \Rightarrow Polish Residential Landlords' Association
- ⇒ Research and consulting companies
- ⇒ Ministries and local self-governments

AMRON vs. banking supervisory requirements

Recommendation J

Characteristics of the database according to Recommendation's requirements:

- \Rightarrow currently updated, but with access to historical data
- ⇒ complex and reliable, containing of different information from possibly all available sources
- ⇒ collecting of data concerning the macro and micro location of real estate
- \Rightarrow Purpose of the database:
- \Rightarrow estimating the current real estate market's rate and predicting future trends
- \Rightarrow increase in quality of appraisals for banks' purposes
- ⇒ developing and popularising the standards as well as unification of collected information
- \Rightarrow simplification of turnover of claims secured by a mortgage
- ⇒ increase in transparency of real estate market as well as of risk connected to that market

Recommendation J dated September 11, 2012 introduces a definition of inter-bank (external) database as independent of bank, standardized system of data gathering and processing, systematically fed with data on real estate market, including characteristics of particular properties and information of real estate values and prices, that enable to analyse and monitor real estate market. Such a database is a fundamental tool for the whole sector's risk monitoring and therefore all banks involved in mortgage business should participate in such a database.

Structure of AMRON database fulfils the requirements of Recommendation J and consists of wider than demanded scope of information on real estate.

Recommendation S and T

AMRON System is a perfect tool for fulfilling restricted requirements of Recommendation S and T:

- ⇒ AMRON's functionalities allow to perform the proper and reliable estimation of real estate
- ⇒ AMRON database allows to control reliability of assumptions and parameters accepted by the appraiser for the valuation needs
- ⇒ System's functionalities are the tool for monitoring changes on real estate market as well as to periodical verification of value of real estate constituting the mortgage collateral
- ⇒ AMRON database is based on reliable, standardized data deriving mostly from notary deeds and appraisal reports

The new version of Recommendation S (IV) of 18 June 2013 on good practices in management of credit exposures secured by mortgages entered into force on 1 January 2014 (recommendations 6, 9.1, 12, 14.10, 15.8 and 20 entered into force on 1 July 2014).

Internal Own Database

Functionality of the Internal Own Database is a unique space in the System, unavailable for other participants. Internal Own Database is prepared for gathering and processing data concerned with Bank's loans and mortgage collaterals and it may be adopted individually for every Bank.

Internal Own Database includes two categories of the attributes describing the outstanding debts:

- ⇒ pre-defined attributes agreed with participating banks and concerning the following data:
- Customer's modulo
- 🔥 loan agreement number
- 🔥 loan agreement data
- 🔥 loan amount
- currency of the loan
- loan period (in months)
- value of the collateral in PLN (as for the loan agreement date)
- Ievel of the LtV ratio in % (as for the loan agreement date)
- status of the loan
- classification of the outstanding

Only attributes marked in red are obligatory when bank uses the internal database.

additional attributes may be defined individually by each bank, depending on its particular needs or procedures; there may be defined approximately 15 additional attributes.

Functionality of the Internal Own Database allows to perform the **periodic updating** of the collaterals value – data of the latest update are saved automatically by the System (date, updated collateral value in PLN, current loan balance and LtV ratio). It makes it possible to compare the current update with the previous one.

Internal Own Database is simple and efficient tool for current monitoring of the value of real estate, verifying the real estate appraisals or updating the value of mortgage collaterals. Representative proportion of data on bank's mortgage collaterals in AMRON database allows to perform the cyclical aggregated report on current status of the collaterals portfolio - **report on mortgage collaterals**.



AMRON System

AMRON database collects information about property characteristics, location and information about the transaction prices from reliable sources. A full description of each property type contains on average about 30 attributes, making it possible to carry out detailed market analysis.

AMRON System gathers and processes the data concerning the following types of properties:

Land property

- agricultural land
- development land
- forest land
- Premises
 - commercian unit
 - residential unit
- Building
 - single family building
 - multifamily building

Commercial property

- hotel / motel / boarding house / spa
- office / retail / services property
- parking/garage
- Agricultural supply base property

Public use property

- cultural and art property / school / kindergarten
- hospital / medical care facility
- sport and recreation property

Municipal property

- sewage purification plant
- waste disposal
- water purification plant

Industrial property

- automotive supply base
- industrial property
- petrol station
- storehouse / logistic centre
- Other property
 - mixed-purpose / other type of real estate
 - renewable energy sources

Sources of information collected in AMRON System:

preliminary sales agreement

(primary market/ secondary market)

purchase-sale

(primary market/ secondary market)

- lease/ rent contract
- donation
- offer
- insurance value
- contribution into company
- tender procedure

- sale by debt collector
- ✤ sale by administrative receivership
- other
- mortgage lending value
- valuation of bank security value of the property determined on the appraisal report, verified for the purpose of securing the payment of the debts
- appraisal report / valuation report information about property value specified for the purpose of securing the debts - source to monitor the quality of appraisal reports prepared by property valuers; each of the participating in the AMRON System banks has access to the information only from own appraisal reports

Characteristics of the System

AMRON System is a fundamental source of information on real estate market in Poland. It enables to register, store and disclose data on real estate market and transaction prices.

Functionalities of AMRON System enable to:

- ⇒ gather and disclose selected data concerning real estate, review the data in form of tabular reports
- \Rightarrow present the information on changes in specific real estate prices scale in form of diagrams-
- \Rightarrow disclose the analysis presenting statistics and current trends on real estate value
- \Rightarrow construct the models for predicting the value of real estate
- \Rightarrow actualize, supplement and verify the data concerning real estate market
- \Rightarrow keep 'the own databases and registers' for particular Users
- ⇒ reliably verify the value of real estate AMRON offers the possibility to monitor different types of risk concerned with mortgage lending

Cooperation with AMRON does not require any additional technical expenditures. AMRON System is an Internet application. Every user of the internet browser may have the access to the application, after fulfilling the minimal technical requirements.

User's competencies are defined individually by defining business authorization of the particular user. It may be additionally limited by defined access to particular types of real estate, sources of information and territorial rang.

AMRON System enables to generate **several types of statistical and analytical reports** generated on the basis of the database resources as well as to review data concerning real estate presented in tabular form.

- Information reports (A, B and H) include general or detailed scope of information on real estate and transactions.
- Statistical reports (C, N, R) enable to analyze the average real estate prices for relevant localization or period of time, as well as to conduct the quantitative or qualitative analyzes of real estate market, including micro and macro economical indicators.
- Analytical reports present the trend of particular real estate prices on the market for defined sub-base of properties or for particular property (Reports type D), actualization of market value of valuated properties as for the defined moment (Reports type E and G).
- Digital maps allow to define the location of properties, to present the properties on the map together with important information on available communication, services, administration offices, hospitals etc.

black list – property registered in AMRON database may be ticked and described as "suspected" property, when it was a subject of dubious transaction, when its physical condition differs from the official description or when its documentation arouse suspicion.

Information Reports

B Report presents the detailed scope of information on real estate. B Report is generated in form of the table and includes all available in the System details of the property.

_	ect all on					- 1
Select	IdT	Attention	Property type	Source of information	Date of transaction / valuation / lease	Pric
~	2012763	-	Residential unit	Purchase sale secondary market	2014-01-15	333
√	2013237	-	Residential unit	Valuation of bank security	2013-12-13	569
✓	2013766	-	Residential unit	esidential unit Purchase sale secondary market 2013-12-17 400		
	2013848	-	Residential unit	esidential unit Purchase-sale primary market 2013-12-30 491		
	2013860	-	Residential unit	Preliminary sales agreement for secondary market property	2013-12-02	271
	2015407	-	Residential unit	Preliminary sales agreement for secondary market property	2013-12-02	320
	2015988	-	Residential unit	Purchase sale secondary market	2014-01-02	500
	2016224	-	Residential unit Valuation of bank security 2013-12-13 635			
	2016225	-	Residential unit Purchase sale secondary market 2014-01-17 633			
	2016429	2016429 - Residential unit Valuation of bank security 2013-12-01 332				
<				1		>
				130 data loaded. Page 1 of 13.		-
				◀ 1 2 3 4 5 6 ▶		
PRICE	s					
Averag	e price fo	r all prope	rties	436 653,31 Average price m ² all proper	rties: 6 972,45	
	Report B	_	sh	ow on map Export to CSV Export to P	PDF Price / value spread	

Results of the report may be presented in graph form:



www.amron.pl

Information Reports

H Raport presents all transactions and occurrences registered in AMRON database concerned with particular real estate, including registered changes of the real estate condition.

(dN	Type of prop	erty Lo	cation					
59795	Residential u	-	zowieckie,	Warszawa, Warszav	va, Wa	arszawa, Ursynów	, KOMISJ	I EDUKACJI NARODOWEJ 56/56
dТ	Date of transaction valuation / lease	Price	Currency	Price PLN	Sour	ce of information	on:	Parking spaces
59795	2006-09-14	295 000,00	PLN	295 000,00	Valua	ation of bank sec	urity	No data
04216	2006-09-04	295 000,00	PLN	295 000,00	Appro	aisal report / Val rt	uation	No data
dT	45979	5				804215		
Property t	ype Resider	itial unit				Residential unit		
						Precinct	1-11-05	
and Regi	sters No data					Plot numbers LR number	4/33, 1/ WA2M/0	1, 1/2 0373994/0
and Negi	scers No data					LR Section III	No data	
						Land surface	No data	
and Regi	ster No data	1				No data		
ERYT		0918123/T1465031	09065/1465	5130988833			3/T14650	3109065/1465130988833
ocation	mazow	eckie, Warszawa, W I EDUKACJI NAROD	arszawa, W				Varszawa,	Warszawa, Warszawa, Ursynów,
ostal cod						02-797		
Number of	56			56				
ouilding								
Unit numb		56			56			
Jrban zon .and	Other	No data Other			Indirect Perpetual usufruct			
wnership Title to premises		Ownership title				Ownership title		
Developm lensity	opment No data				High density			
Type of building	No data	No data				Multifamily high		
Register o monumen		No data				No data		
						Balcony / loggia		
						Strage room / b	basement	
	-6					High		
5tandard (unit	of No data	1				Tiling Panels		
						Closets		
							dows	
						Kitchen furnishi		
						Entry gate		
echnical						Building indulat		last 4 years
fechnical standard o	of No data					New / renovate		
uilding	110 000	No data				Renovated stair	rcase	
						Fencing Intercom		
/ear of								
onstructi						2003		
Jsable are		n2				40,07 m2		
loor	0					6	h 21	
						Multifamily buil		
						Multifamily buil Shopping malls		inse/
leighbour	hood No data					Shopping malls Public infrastructure		
-ignoodi						Forest, park		
						Recreation areas		
						Green areas		
lumber of ooms	f 0					2		
lumber of toreys	f o					16		
						Single-level		
Functional Unit	lity of No data					En suite kitcher		
						Well-planned u	nit	
Building construction	on No data	1				Mixed		
consci ucci	WHT.							

0

Export to PDF

November 2018

Information Reports

FOTO Report allows the User to verify the technical condition of the building and its standard based on attached pictures of the property. After purchasing the PHOTO Report User goes to the site to generate a file with photos for the chosen property.



Address of property: mazowieckie, Warszawa, Warszawa, Warszawa, Bemowo, GÓRCZEWSKA 14/27 CENTRUM AMRON - Report was generated on 2015-04-10 09:50:47

The User can generate the PHOTO Report from details of the Report B and Report H. After selecting a particular property (for the Report B), or from the Report H, there is available to buy photos, which will be packed. Photos have Id of photo, the date of execution and the address of the property.

In the absence of photos for the particular property, the button Raport Foto is not displayed in the Report H, in the case of the Report B – there will be displayed a message about the lack of photos, and the fee will not be charged.

C Reports present the average real estate prices, in respect to location or time function. The scope of analysed data are defined by the User. It may concern i.e. in particular localization, type of real estate, source of the information and – depending on the type of the report – additional parameters. AMRON System offers five types of such Reports.

C1 Report presents the average price of sq. m. in particular location for relevant period of time. It is generated in form of the histogram and displays the price level for chosen locations. A single bar in the report indicates the level of prices for one location. Height of the bar is the arithmetic mean of prices available in the AMRON System for the period specified by the user. Under each bar chart shows the average price and the number of transactions that were used to calculate this average value.



No of transactions below which columns will be hidden:	0	Change		
Recieved Results				
Location	Average price for 1 m ² [PLN]	No of transactions		
Bemowo	6 880,31	527		
Białołęka	5 962,56	773		
Bielany	7 168,96	737		
Mokotów	8 280,77	1 001		
Ochota	7 790,61	321		
Praga-Południe	7 159,59	799		
Praga-Północ	6 709,86	145		
Rembertów	5 958,08	44		
Śródmieście	9 986,94	606		
Targówek	6 191,73	372		
Ursus	6 616,69	295		
Ursynów	7 814,33	437		
Wawer	6 586,28	178		
Wesoła	7 477,54	43		
Wilanów	7 296,14	492		
Włochy	6 811,96	239		
Wola	7 803,64	708		
Żoliborz	8 155,33	533		



Export to PDF Export to CSV

C2 Report presents the prices volatility in one chosen location divided into user selected time parameter.

REPORT TYPE SELECTION > PROPERTY TYPE > LOCATIONS AND SOURCES > PARAMETERS > ADDITIONAL REQUIREMENTS > MODEL DETAILS > REPORT C2

Į	3	REPORT: AVERAGE PROPERTY SQM PRICE FOR SELECTED TIME PERIOD FOR SELECTED LOCATIONS
8	Chosen locations	
8	Chosen property types and data so	burces
8	Remaining report selection criteria	à



Obtained results			
Date	Average price for 1 m ² [PLN]	Number of transaction	15
January 2013		6 753,89	136
February 2013		6 854,27	100
March 2013		7 007,53	121
April 2013		6 855,20	129
May 2013		6 941,59	128
June 2013		6 914,67	96
July 2013		6 884,74	72
August 2013		6 729,72	64
September 2013		6 873,88	69
October 2013		6 797,66	59
November 2013		6 945,72	49
December 2013		6 960,38	51

Export to PDF

Export to CSV

www.amron.pl

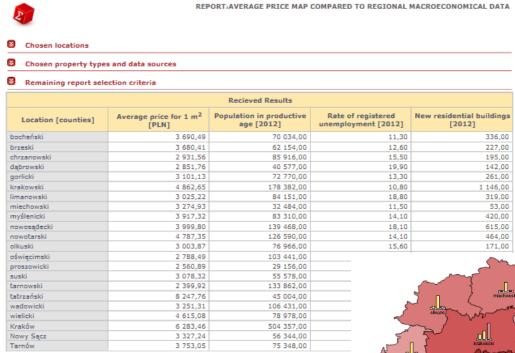
C3 Report is generated in the form of map which presents the average prices in particular location, including chosen macroeconomic indicators obtained from Regional Data Bank.

Additional data acquired from Regional Data Bank gathered in AMRON System:

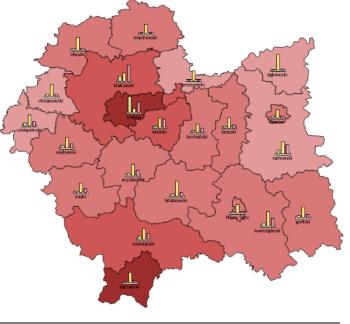
- dwellings in total
- population in cities (% of total population)
- population in pre-productive, productive and post-productive age
- completed residential buildings
- ▲ completed dwellings in total
- permits issued for dwelling construction

- Gross Domestic Product per capita
- ▲ agricultural holdings
- total area of agricultural land
- 🔥 area of arable land
- ✤ registered unemployment rate
- ▲ average gross wage per month

REPORT TYPE SELECTION » PROPERTY TYPE » LOCATIONS AND SOURCES » PARAMETERS » ADDITIONAL REQUIREMENTS » REGIONAL MACROECONOMICAL DATA » MODEL DETAILS » REPORT C - DETAILS



Macroeconomic data
Population in productive age
Rate of registered unemployment
New residential buildings



C4 Report presents the average real estate price for particular location and chosen data source and it allows to estimate differences in prices/ values deriving from different sources (e.g. notary deeds of real estate purchase, appraisal reports, realtor's offers, donation agreements etc.).



Obtained results				
Location	Source of information:	Avarage price per 1 m ² [PLN]	Price median for 1 m ² [PLN]	Number of transactions
mazowieckie,	Purchase sale secondary market	9 588,46	5 685,74	18
Warszawa, Warszawa,	Appraisal report / Valuation report	9 259,21	5 170,74	20
Warszawa, Mokotów	Valuation of bank security	7 506,63	4 271,78	18
mazowieckie.	Purchase sale secondary market	7 760,91	4 633,62	11
Warszawa, Warszawa,	Appraisal report / Valuation report	5 394,13	2 908,06	8
Warszawa, Ochota	Valuation of bank security	11 919,33	8 805,47	3
mazowieckie,	Purchase sale secondary market	8 007,35	5 782,95	57
Warszawa, Warszawa, Warszawa,	Appraisal report / Valuation report	8 380,04	4 714,09	55
Śródmieście	Valuation of bank security	6 298,73	4 131,39	46
mazowieckie,	Purchase sale secondary market	15 224,98	6 649,30	21
Warszawa, Warszawa,	Appraisal report / Valuation report	10 839,53	6 648,94	27
Warszawa, Ursynów	Valuation of bank security	9 973,94	3 999,70	26
mazowieckie,	Purchase sale secondary market	5 925,29	3 821,95	20
Warszawa, Warszawa,	Appraisal report / Valuation report	10 426,44	5 320,74	18
Warszawa, Wola	Valuation of bank security	5 169,37	3 177,82	21

Export to PDF Export to CSV

C5 Report presents changes of median and average price of sq. m. of dwelling for chosen locations.

REPORT TYPE SELECTION » PROPERTY TYPE » LOCATIONS AND SOURCES » PARAMETERS » ADDITIONAL REQUIREMENTS » MODEL DETAILS » REPORT C5

 REPORT: CHART OF MEDIAN CHANGES AND AVERAGE AREA PRICE FOR SELECTED LOCATIONS

 Chosen locations

 Chosen property types and data sources





Show chart for the median

Date	A		B	B		с		D	
Dutt	S	м	s	м	s	м	S	м	
January 2013	8 619,49	7 984,97	7 486,78	7 459,28	6 949,76	7 065,13	10 985,10	9 490,9	
February 2013	8 077,24	7 787,24	7 737,29	7 500,00	7 159,07	6 850,88	9 839,41	9 290,14	
March 2013	8 009,57	7 754,87	7 797,58	7 733,33	6 909,10	6 891,39	9 535,94	8 926,3	
April 2013	7 966,74	7 446,81	7 646,87	7 596,69	6 727,53	6 607,14	9 873,08	8 973,0	
May 2013	7 738,69	7 550,20	7 752,88	7 416,67	7 188,79	7 081,28	9 669,41	8 990,4	
June 2013	8 131,48	7 734,74	8 027,07	7 661,65	6 950,37	6 913,12	10 302,82	9 101,7	
July 2013	8 402,16	7 756,55	7 576,01	7 576,01	7 299,44	7 187,91	9 473,89	8 656,0	
August 2013	7 961,31	7 770,40	7 854,57	7 923,11	7 193,45	6 842,11	10 441,44	9 080,9	
September 2013	8 313,04	7 909,78	7 597,88	7 597,88	7 397,24	7 294,41	10 281,62	9 481,8	
October 2013	8 374,46	7 907,60	7 882,37	7 944,10	6 983,43	6 964,29	10 005,17	9 535,2	
November 2013	8 470,47	8 229,80	7 388,14	7 367,23	7 116,86	6 857,47	9 404,74	8 729,9	
December 2013	7 971,76	7 929,59	8 407,26	8 399,67	6 936,57	6 659,66	10 332,03	9 519,2	

Number of transactions				
Date	A	В	с	D
January 2013	273	82	240	109
February 2013	245	83	194	130
March 2013	262	93	218	106
April 2013	287	89	227	154
May 2013	182	71	262	130
June 2013	121	34	194	125
July 2013	138	47	120	145
August 2013	117	25	69	121
September 2013	143	37	86	61
October 2013	125	36	83	41
November 2013	90	42	69	30
December 2013	91	37	79	34

Legend	
Α	Mokotów, Warszawa, Warszawa, mazowieckie
В	Ochota, Warszawa, Warszawa, Marszawa, mazowieckie
C	Praga-Południe, Warszawa, Warszawa, Marszawa, mazowieckie
D	Śródmieście, Warszawa, Warszawa, Warszawa, mazowieckie
M	Median [PLN]
S	Average price [PLN]

Export to PDF Export to CSV

R1 Report presents the land market for maximum four locations (voivodships or counties). Analysis may be performed for agricultural land or construction land.

The result of R1 Report contains:

- bar graph showing the average unit prices for chosen period of time, type and other parameters; number of bars depends on number of chosen locations
- bar graphs showing the average unit price of land for each of the selected locations
- results in tabular form indicating the average values and the number of data by types of land - in case of agricultural land

R2 Report is an analysis of changes in average agricultural land prices and construction land prices in one particular location. It presents the average values and the number of transactions by types of land - for agricultural land and by surface.

Graphic form of R2 Report contains:

30 00

15 000

[M] 20 00

- bar graph showing the average unit prices for land in chosen location with a number of bars corresponding to the number of time intervals defined by user
- pie graph presenting the number of land transactions by surface
- bar graph showing the average price /value of the land for the entire analyzed period by surfac

Analysis of farm land in selected location for selected time periods

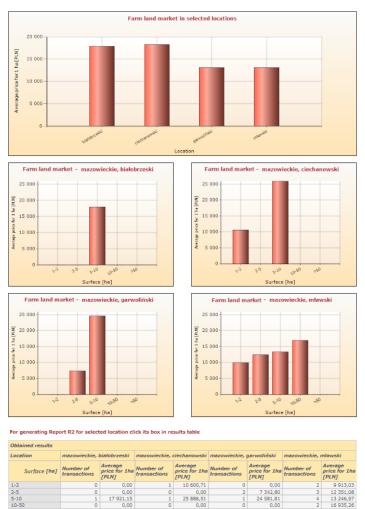
Overal number of transaction percentage share for selected period

10-50 ha

5-10 ha

2-5 ha

5-10 ha - 337



0,00 18 243,61

13 089,14

Export to PDF Export to CSV

13 067,06

10-50 ha - 28% 2-5 ha - 11% >50 ha - 0% 1-2 ha - 28% Average price for selected period 30 00 25 000 I a [PLN] 20 0 15 00 10 00 5 00 ained results Ave price 1ha [PLN] age pri-1ha [PLN] 15 915,1 17 723,4 0,0 27 975,4 25 886.5 0,0 0,0 16 040,9 25 886,5 27 975,44 16 122.4

18 243.61

20 814,73

0

Export to PDF Export to CSV

16 721.39

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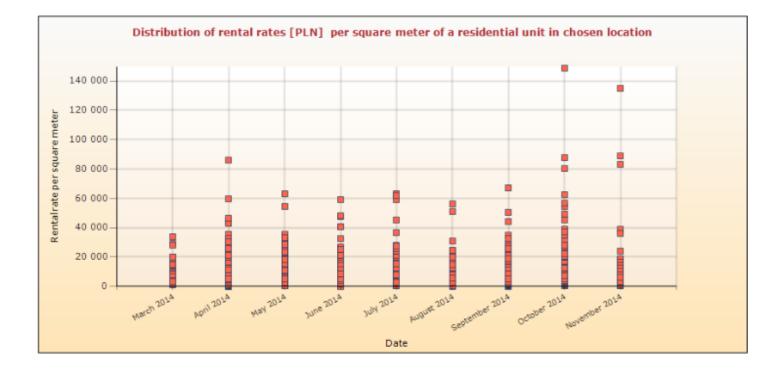
17 921,15

0

November 2018

0,00

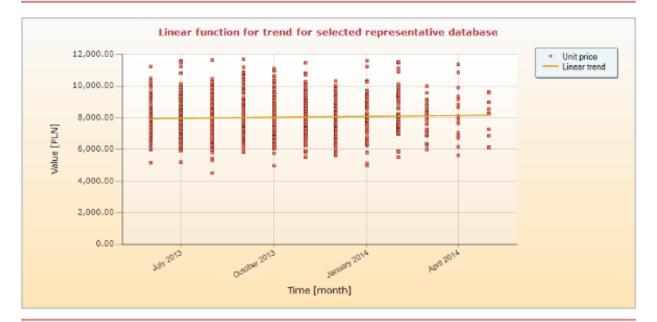
N Report shows the distribution of rent rates per m2 for two typical real estate (flats and business premises). Report results are presented in the tabular form (the average rent rate in specified time for three different currencies: PLN EUR and USD with the information about the amount of transactions) and the graphical form (in the form of chart decomposition rent rates).



Obtained results				
	[PLN]			
Date	Average rental rate per square meter	Number of transactions		
March 2014	7 257,97	103		
April 2014	7 473,51	441		
May 2014	6 733,02	453		
June 2014	7 264,36	442		
July 2014	7 204,02	440		
August 2014	6 953,79	371		
September 2014	6 962,32	422		
October 2014	8 272,77	404		
November 2014	8 477,30	173		

D1 Report presents market trends in changes of real estate's prices on the defined sub-base of the market. Unit prices of real estate are processed on the date of the performance analysis. There is also calculated compliance of the model with unit prices.

DETAILS >> END RESULT - LINEAR TREND			
Chosen locations			
Chosen property types and data sources			
Remaining report selection criteria			
Results for indicated model.			
Average value from unit transaction prices	7 999,94 PLN		
Standard deviation from unit transaction prices	1 235,67 PLN		
Number of analysed transactions	754		
Number of analysed properties	925		
Predicted property price for date of first transaction	7 939,06 PLN		
Probable unit transaction price growth for each month			



COMPATIBILITY

Compatibility with linear model	0.99
Description	Compatibility very high

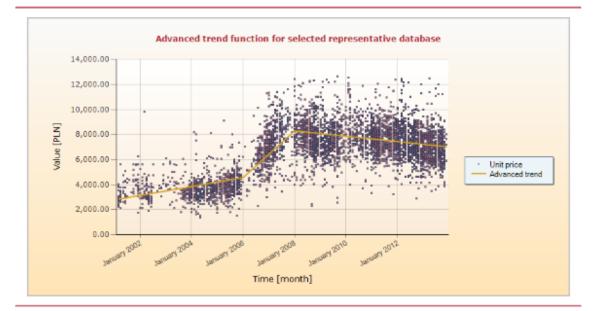
Legend - compat	ibility (C)		
C > 0.9	Compatibility very high		
0.9 >= C > 0.6	Compatibility high		
0.6 >= C > 0.3	Compatibility average		
0.3 > C	Compatibility low		
			Interim results (linear model)
5		Export to PDF	incentification (incentification)

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D2 Report is an advanced model of the real estate's price changes trend on the defined sub-base of the market, which includes the real moments of increase and decrease of prices..

REPORT TYPE SELECTION & PROPERTY TYPE & LOCATIONS AND SOURCES & PARAMETERS & ADDITIONAL REQUIREMENTS & MODEL DETAILS & END RESULT - ADVANCED TREND

3	Chosen locatio	ons							
5)	Chosen prope	rty types a	nd data sources						
2	Remaining report selection criteria								
Res	sults for selecte	ed model							
т,	Date	Time (t)	Number of transactions (n)	Unit price (c)	в"	Unit in price/month rise	Unit price/year rise		
то	March 2001	0	1034	3 741,95	29,76	0,80%	9,55%		
Τ1	January 2006	58	930	7 117,04	155,27	2,18%	26,189		
Τ2	January 2008	82	4408	7 570,76	-17,74	-0,23%	-2,819		
Leg	rend								
		T _n	Date of crucial changes in unit pr	operty transactio	n price lev	rel			
		Time (t)	Number of months from date (TO	Number of months from date (T0) of first transaction to date of analysed transaction from time period [T0,T _{n+1}]					
	Number of trans	actions (n)	Number of analysed transactions	in time period [T	T_+1]				
	Ur	nit price (c)	Unit property transaction price fr	om time period []	[PLN]			
		B.	Estimated parameter of unit tran				.1		
He	it is price/month	n	Unit price rise in every month of		inges in m	nonth from time period [1 _n ,1 _{n+}	1		
211			Unit price rise in year	and period					



COMPATIBILITY

Compatibility coefficient	0,54
Description	Compatibility average

Export to PDF

Legend

Legend - compati	ibility (C)	
C > 0.9	Compatibility very high	
0.9 >= C > 0.6	Compatibility high	
0.6 >= C > 0.3	Compatibility average	
0.3 > C	Compatibility low	



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Indirect results (advanced model) >>

E1 Report - prediction of the value of particular property. Such update may be perfor-

med from the level of A or B Report and its result may be saved in Internal Own Database module.

REPORT TYPE SELECTION » PROPERTY TYPE » PROPERTY CHOICE FOR PREDICTION PURPOSE » MODEL DETAILS » PREDICTION - REPORT PIV

	MILL Adda	mazowieckie	Device b	Warszawa
	Województwo Gmina	Warszawa	Powiat Miejscowość	Warszawa
Locations:	Dzielnica	Wola	Osiedle	warszawa
	Ulica	GÓRCZEWSKA	Bufor	1500 m
	erty types and data sour	rces		
		rces Results for indic	tated model.	
	eport selection criteria		ated model.	

Ma	Market value index of analyzed properties - appointed on basis of multiplicative model.								
IDT IdN						Forecasted maximum value for 1 m ² [PLN]			
T1	N1	-	7 053,70	1 200,35	5 853,35	8 254,04			

M	Market value index of analyzed properties - appointed on basis of multiplicative model.									
10	T Id	Assumed property value [PLN]	Forecasted value of property [PLN]	Standard variation of forecasted property value [PLN]	Forecasted minimum property value [PLN]	Forecasted maximum property value [PLN]	Surface area[m ²]			
Т	1 N:	-	317 416,29	54 015,56	263 400,73	371 431,85	45,00			

PREDICTION CREDIBILITY

Prediction credibility	1,00
Description	Credibility very high

Legend

Legend - a	ttribute	Legend - predictio	Legend - prediction credibility (PC)		
Α	Urban zone (*)	PC > 0.9	Credibility very high		
В	Type of parking space	0.9 >= PC > 0.6	Credibility high		
C	Development density	0.6 >= PC > 0.3	Credibility average		
D	Type of building (*)	0.3 > PC	Credibility low		
E	Standard of unit				
F	Technical standard of building (*)				
G	Neighbourhood				
н	Functionality of unit				
I	Building construction (*)				
J	Communication access				

Export to PDF

Export to CSV

- value prediction enables to determine the average unit price of selected package E2 Report of properties. System performs the value prediction also for properties not registered in AMRON database. However, the database must contain the data for similar properties, i.e. properties of similar size and other features, located nearby.

	PORT TYPE SELECTION » AVAILABLE ANALYTICAL REPORT LIST » MODEL DETAILS » PREDICTION - REPORT PROP EPORT DETAILS » PREDICTION - REPORT PIV	ERTY SELECTION
Į		
8	Chosen locations	
8	Chosen property types and data sources	
8	Remaining report selection criteria	
	Results for indicated model.	
Nu	umber of analysed transactions	33 867
Nu	umber of analysed properties	38 197

For viewing single property details, select IdN in result table.

Market value index of analyzed properties - appointed on basis of multiplicative model.										
IDT	IdN	Assumed property value for 1 m ² [PLN]	Forecasted value of property for 1 m ² [PLN]	Standard variation for 1 m ² [PLN]	Forecasted minimum value for 1 m ² [PLN]	Forecasted maximum value for 1 m ² [PLN]				
2149068	1895380	8 002,01	6 360,11	21,53	6 338,58	6 381,64				
2153071	1898787	6 904,14	6 360,11	21,53	6 338,58	6 381,64				
2098777	1858364	6 699,80	6 446,27	49,83	6 396,44	6 496,10				
1972539	<u>1756523</u>	7 238,80	6 158,36	50,56	6 107,80	6 208,92				

Market va	alue index	of analyzed pro	perties - appointed	l on basis of multiplicati	ive model.		
IDT	IdN	Assumed property value [PLN]	Forecasted value of property [PLN]	Standard variation of forecasted property value [PLN]	Forecasted minimum property value [PLN]	Forecasted maximum property value [PLN]	Surface area[m ²]
2149068	<u>1895380</u>	275 429,17	218 915,05	740,99	218 174,06	219 656,04	34,42
2153071	1898787	345 000,00	317 814,79	1 075,75	316 739,04	318 890,54	49,97
2098777	1858364	337 000,00	324 247,37	2 506,39	321 740,99	326 753,76	50,30
1972539	1756523	323 140,00	274 909,12	2 257,07	272 652,04	277 166,19	44,64

PREDICTION CREDIBILITY

Prediction credibility	1,00
Description	Credibility very high

Legend

Legend - attribute		Legend - prediction credibility (PC)		
Α	Urban zone (*)	PC > 0.9	Credibility very high	
В	Type of parking space	0.9 >= PC > 0.6	Credibility high	
C	Development density	0.6 >= PC > 0.3	Credibility average	
D	Type of building (*)	0.3 > PC	Credibility low	
E	Standard of unit			
F	Technical standard of building (*)			
G	Neighbourhood			
н	Functionality of unit			
I	Building construction (*)			
3	Communication access			



Export to PDF Export to CSV

Report G - property value prediction

November 2018

G Report - prognosis of real estate value, generowana generated from the value prediction level (i.e. E1 or E2 Report), which determines the market value of real estate projected for indicated date of future sale and the risk factors.

REPORT TYPE SELECTION > PROPERTY TYPE > LOCATIONS AND SOURCES > PARAMETERS > ADDITIONAL REQUIREMENTS > MODEL DETAILS > REPORT G



Chosen locations

- Chosen property types and data sources
- Bemaining report selection criteria

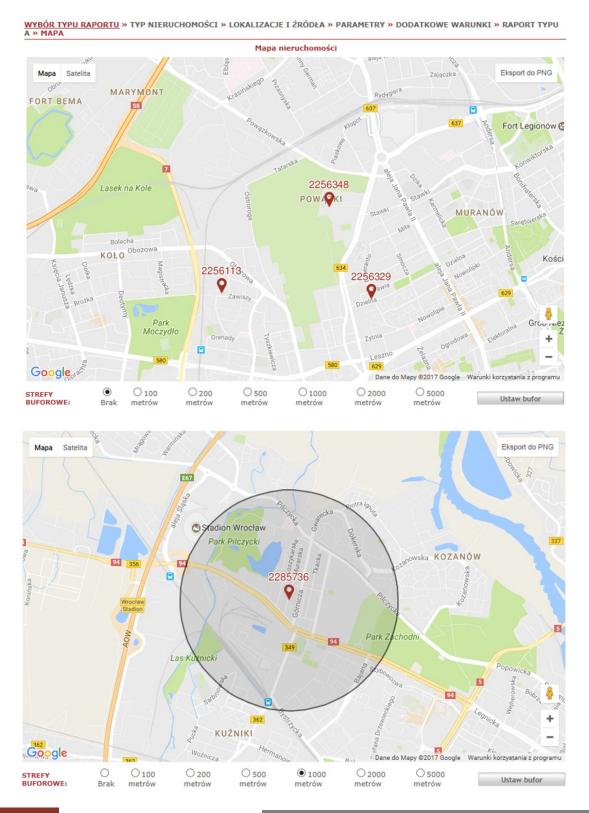
Date of future sale: 2014-11-11

Results for G Report:						
IDT	IDN	Assumed value of property for 1 m² [PLN]	Forecasted value of property for 1 m ² at the date of analysis [PLN]	Number of months (t)	Forecasted value of property for 1 m ² at the date of future sale [PLN]	
T1	-		8 726,15	40	8 669,44	
T2	-	-	8 879,02	40	8 822,31	
Т3	-		8 879,02	40	8 822,31	

Define the date of future sale

Google Maps

Google Maps allow to define the location of searched real estate by marking the buffer zones. System enables the visualisation of searching results on the map. Digital map is complemented with points of interests enabling to estimate the nearest surrounding of the property (e.g. schools, administration offices, communication facilities, hospitals, service canters etc.).



November 2018

AMRON as a tool for risk monitoring

Proper recognition of the market is a key element in the risk assessment. It is more important due to the fact that existing real estate market crises shows (ex post, unfortunately) how dangerous results might cause real financing without the risk assessment. Transaction data base might allow monitoring and comprehensive market analysis, and, in consequences, risk mitigation.

The real estate market development perspectives require more intensive action towards higher safety level of the banks, without limiting mortgage loans offers. More transparent market is a primary condition for safety in real estate market finance.

From the banks and banking supervision perspective, the lack of commonly and easily available information on real estate market (in regard to property transaction prices and also macroeconomic and microeconomic factors) required for the comprehensive analysis of the risk factors related to the property, is a critical element, which increases risk in property finance.

The German, French and Far East experiences evidently indicate that the situation in the real estate market has direct impact on the banks financial results, especially on those, who are significantly involved in that market finance. Market slow down or crisis have impact on mortgage portfolio quality, and, at the same time on financial standing of the lender. Sometimes on the results of the whole sector as well. So the banks are obliged to minimize the risk related to the real estate, which is a collateral of the mortgage loan. The basic element for that risk assessment is constant real estate market monitoring, what in the final effect should be a part of the general credit risk assessment.

System for Analysis and Monitoring of Real Estate Market Transactions aims to assure a quick access to the data necessary for making business decision and estimating risk related to real estate. Creating such a reliable and credible repertory of information on real estate transaction prices shall facilitate decisions in the field of real estate market, augment the security and provide market's transparency.

AMRON System was established for the banking sector, however its development is succeeded with increasing interest of other entities participating in real estate market, as well as of National Bank of Poland and governmental bodies.

AMRON Centre aims to constantly progressing the analytical functionalities of the System in order to assure its Users the efficient, accessible and complex tool for analysing the whole market and particular properties.

Further dynamic development of the System, improving its effectiveness and security, broadening the scope of products and services, inviting entities from outside the banking sector, as well as cooperating with external registers and databases shall allow to increase the AMRONdatabase resources and will abate AMRON in its goal to become a leader in the area of information and analysis of real estate market.



Market Research

AMRON Centre is a professional analytical and research centre, specializing in issues relating to the real estate market analysis and monitoring. Since over 10 years we have provided our clients and partners with reliable information on real estate market, we have explained the phenomena recorded on that market and we have assured the access to dependable economic information. Our reports are based on actual transaction prices.

Our expertise and experience covers assessing the influence of transaction prices changes on Polish housing market perspectives – as the only market researches provider, we analyze changes on housing loans market, due to access to the data gathered in System for Analysis of Real Estate Financing Market (SARFiN System).

We guarantee comprehensive approach to the real estate market issues, including the complex analyses of micro- and macroeconomic factors and long-term perspective grounded on historic data, current market prices and prognoses.

AMRON Centre reports provide a useful and verified resource for business decisions, risk estimation and prognoses of the investment's profitability.

Tools we offer for banks are used for i.a.:

- monitoring of mortgage collaterals value,
- ▲ risk management of mortgage collaterals portfolios stress tests, concentration limits, recovery strategies,
- ★ credit policy designing defining the risk appetite, estimating the capital intensity of mortgage portfolio,
- ★ fulfilling the Financial Supervision Authority's requirements defined in Recommendations S,J and W.

We assure support on every stage of the investment process – starting from planning, through plot purchase, investment preparation and sales – our tailor-made solutions for developers include among others:

- construction plot analysis and analysis of the potential investment's location, helpful particularly in planning phase and for verification of the investment assumption,
- efficient tools for monitoring the current situation on local housing market: reports on average housing prices, including information on floor areas of sold units and reports of trends presenting changes in housing values on particular local marke,
- exclusive prognosis models and reports on probability of changes in housing values monitoring of the new investment' commercialization and prices.

We develop periodic analytical publications and reports on local markets, as well as professional reports prepared accordingly to the detailed specifics delivered by investors, developers and other entities seeking for solid information on particular market segment, location and time period.

Our reports may be prepared in both Polish and English language version.

Contact: Jerzy Ptaszyński, Research and Market Service Director (e-mail: jerzy.ptaszynski@amron.pl, phone: +48 22 463 47 63, mobile: +48 502 623 523)

Verification of real estate value

AMRON Centre offers the comprehensive service of the valuation process, which includes ordering, quality control, value verification and certification of the appraisal report basing of defined substantive criteria.

We valuate real estate that constitute or will constitute mortgage collateral of loans granted by banks. We are experienced in execution of package orders aiming to update the mortgage collaterals portfolio value.

Valuations ordered through AMRON Centre are carried out by independent valuers authorised under the Law on real estate management – we cooperate with network of over two hundred valuers operating on the whole territory of Poland. We assess all types of real estate. Appraisal reports are drew up in accordance with applicable laws and regulations.

We guarantee:

- verification of adequacy of appraisal reports' content, accuracy of calculations, methods and timing of order execution
- providing banks with appraisal reports fulfilling the requirements defined by Financial Supervision Authority in Recommendations J and S
- quality assessment performed by independent entity nor involved in banking processes of risk analysis and credit decision
- cooperation with valuers trained by Polish Banks Association and Polish Federation of Valuers Associations – we promote continuous professional development and raising the quality of the provided services
- using the AMRON System for verification of real estate value and for certifying the appraisal reports, combined with ongoing feeding the AMRON database with information from appraisal report
- possibility to precise assessment of recoveries in portfolio monitoring process
- competitive prices

Contact: Agnieszka Gołębiowska, AMRON Centre Director (agnieszka.golebiowska@amron.pl, phone: +48 22 463 47 57, mobile: +48 723 723 786)



November 2018

Platform of Mortgage Borrowers Support

Platform of Mortgage Borrowers Support (PWK) is a project aiming to support those clients of the banks, who do not succeed in debt servicing – our help includes advisory and mediation in selling the property. From the other hand, the project's assumptions provide for banks' assistance by increasing the effectiveness of the "difficult" (i.e. non performing or under vindication) mortgage loans recovery.

We offer help in proceeding the voluntary sales of property constituting the mortgage loan collateral and we are launching the interbank database of mortgage collaterals, in strict cooperation of Polish Banks Association, banks and clients.

The PWK project will benefit with:

- \Rightarrow complex support for mortgage borrowers, who cannot deal with regular repayments of the loans (also denominated in foreign currencies)
- ⇒- faster finalization of sales process, which means lower costs and shorter period of recovery, comparing to enforcement proceedings
- \Rightarrow higher level of received amounts
- Contact: Jakub Kaczor, Platform of Mortgage Borrowers Support Coordinator (e-mail: jakub.kaczor@amron.pl, phone: +48 22 463 47 67, mobile: +48 723 723 796)

System for Analysis of Real Estate Financing Market

System for Analysis of Real Estate Financing Market (SARFiN) is a web application addressed to banks and dedicated to exchange of information on volume and value of new mortgage lending, as well as to provide participating banks with data related to of mortgage loans portfolio risk estimations.

System was launched by Polish Banks Association in 2001 and presently is used by 15 banks, which accordingly to reciprocity principle input own data and in return receive the standard reports enabling to estimate the volume and dynamics of the mortgage market, including particular bank's position on that market. Information generated in SARFiN System reflects approximately 90% of the total housing loans for individuals granted by Polish banks. Data collected in the System are made available to National Bank of Poland.

Data gathered in SARFIN System are used in AMRON Centre's reports, both those available at our website (AMRON-SARFIN Reports, as well as analyses and publications) and also in specialist analytical publications developed on individual order of banks, investors, developers and other entities interested in reliable information on particular market segment in specific location and time period.

SARFiN also develops new services for banks and their customers: a loan affordability index, evaluation and estimation of the real estate finance market potential and the presentation of 'risk maps' for particular regions.

SARFIN System is an excellent source of information enabling to verify trends in the real estate finance market.

Contact: Marta Polkowska, SARFiN System Data Administrator (e-mail: marta.polkowska@amron.pl, phone: +48 22 463 47 68)

WHAT WE DO?

NATIONWIDE DATABASE ON REAL ESTATE TRANSACTIONS

Our goal is a reliable and standardized database on real estate prices and values, enabling to monitor and analyse developments in Polish real estate market. We sincerely invite all participants of the market to join this project.

MARKET ANALYSES

AMRON Centre performs specialized analyses for individual order on particular market segment, region or time period.

We also offer a series of analytical report on price changes of residential dwellings, building plots and agricultural land In selected local real estate markets (only Polish versions available).

Complete information on accessible reports is available at our website www.amron.pl

VERIFICATION OF REAL ESTATE VALUE

Functionality of real estate value estimation enables to verify the current value of specific properties based on value prediction algorithm. Functionality is available at www.amron.pl

PERIODIC REPORTS

Quarterly report on current trends on basic real estate market figures - "AMRON – SARFIN Report on housing loans and real estate prices" is already a commonly known source of information on current trends on the market. Report is useful for professional profound analysis of the market development, it supports business decisions concerned with investing on real estate market both for commercial investors, as well as for individuals.

All already published editions of the report are available at www.amron.pl

Contact us for cooperation:



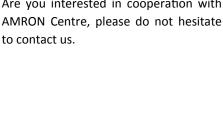
AGNIESZKA GOŁĘBIOWSKA

AMRON Centre Director SARFiN System Coordinator e-mail: agnieszka.golebiowska@amron.pl phone No.: 22/ 463 47 57 mobile + 48 723 723 786



JUSTYNA BADURA

Customer Relations Specialist e-mail: justyna.badura@amron.pl phone No.: 22/ 463 47 66



WE ASSURE:

- standarisation of data gathered by entities active on real estate market
- access to business supporting tools
- logistic and substantial support for educational initiatives and trainings addressed to professional real estate participants
- cooperation with legislative initiatives concerned with increase of quality and security of real estate market
- liaison with all real estate market participants for the market transpa-

rency Are you interested in cooperation with

Raport AMRON-SA

2/2018